REMARKS

Claims 1-25 are all of the claims presently pending in the application. Various claims are amended for clarity.

It is noted that Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-16 and 25 stand rejected under 35 USC §102(b) as allegedly anticipated by US Patent 5,963,956 to Smartt. Claims 17-20, 22, and 23 stand rejected under 35 USC §102(e) as allegedly anticipated by US Patent 7,010,522 to Jagadish et al. Claim 21 stands rejected under 35 USC §103(a) as allegedly unpatentable over Jagadish, further in view of Smartt. Claim 24 stands rejected under 35 USC §103(a) as allegedly unpatentable over Smartt.

The prior art rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

Applicant's invention, as disclosed and claimed in independent claim 1, is directed to a method of monitoring continual queries over moving objects. A query region is identified in a digital format. A covering for the query region is constructed, using a processor of the computer, using at least one shingle, so that said query region is completely covered by said at least one shingle and no section of any said at least one shingle falls outside said query region.

The conventional methods described beginning at line 1 of page 3 of the specification have various problems, including, as described at lines 1-6 of page 5, it is not known whether an object inside a cell is within the boundaries of a query stored in a partial list of that cell.

In contrast, the present invention provides a method by which a query region is strictly covered by one or more shingles, although the shingles are permitted to overlap.

II. THE PRIOR ART REJECTIONS

The Examiner continues to allege basically the same rejection as previously applied, that Smartt anticipates the invention described by claims 1-16 and 25 and renders obvious claim 24. The Examiner also alleges that Jagadish anticipates claims 17-20, 22, and 23, and, when modified by Smartt, renders obvious claim 21.

Applicants respectfully disagree and again respectfully submit that the rejection of record fails to establish a *prima face* rejection, for the reasons described below.

First, it is noted that, during the telephone interview including co-inventor Wu, dated January 15, 2009, Applicants explained that, in at least one sense, the present invention reverses the methods used in conventional systems used for monitoring moving objects, in that the region breakdown (e.g., the shingle covering) occurs for the query, not the contents of an underlying database, and the present invention provides an indexing between these shingles of the queries and moving objects. Applicants again respectfully submit that there is nothing in either or both of the cited references that provides all the elements of the claimed invention, including even the independent claims.

More specifically, Applicants submit that the rejections of record are deficient for the following reasons.

Relative to independent claim 1, Applicants first point out that the claimed invention is clearly directed to monitoring moving objects. The Smartt reference is directed to the entirely different problem of assigning stationary multidimensional objects, as clearly described in the Abstract. Relative to this aspect of the claimed invention, the Examiner points to lines 63-67 of column 1, lines 31-39 of column 27, and the Abstract of Smartt. However, none of these descriptions even mention a moving object.

Hence, turning to the clear language of the claims, in Smartt there is no teaching or suggestion of: "... monitoring continual queries over moving objects, said method comprising: retrieving ... over which movements of moving objects are to be monitored ....", as required by independent claim 1.

Second, the claimed invention clearly requires that a covering be constructed over a query region to be monitored for moving objects. Even giving the Examiner's interpretation

the benefit of the doubt, at best, the method of Smartt is reverse from that necessary to satisfy the plain meaning of the claim language, as Applicants explained during the above-mentioned telephone interview.

That is, in the claimed invention, the query region is a predefined region that is retrieved for purpose of constructing a covering using shingles. At best, in Smartt, the shingles that result from covering a multidimensional object define a region of that multidimensional object in the underlying database, a construction process reverse from that required by the claimed invention, since it is on an underlying database, not a query region.

Hence, in Smartt there is no teaching or suggestion of: "... retrieving ... a query region representing a continual query over which movements of moving objects are to be monitored, ... ; and constructing ... a covering for said query region .... ", as required by independent claim 1.

Independent claims 17, 24, and 25 have similar language and are similarly distinguished from Smartt.

Relative to claims 3, 15, and 16, Smartt has nothing to do with moving objects. The descriptions at lines 18-26 of column 18, lines 36-43 of column 13, and lines 7-11 of column 21 have nothing whatsoever to do with moving objects.

Hence, turning to the clear language of the claims, in Smartt there is no teaching or suggestion of: "... establishing, using said processor, an object identification listing for each object being monitored, said object identification listing providing an indication of which shingles cover an object and which query region includes these shingles; and updating said object identification listing as said object moves", as required by claim 3. Claims 15 and 16 include additional details involving steps for moving objects that likewise are not present in Smartt, since Smartt does not involve moving objects. Independent claim 24 and 25 and dependent claims 18 have similar reference to moving objects.

Relative to claimd 5-14, since Smartt does not have predetermined query regions, there is clearly no optimum shingle size to cover a predetermined query region, as required by claims 5 and 9. The discussion in lines 23-39 of column 10, to which the Examiner points for claim 5, has nothing to do with an optimum size of shingles over a predefined query region. Similarly, relative to claims 6, 7, and 10-14, without having a predefined query region, there clearly is no construction over a predefined query region, as described in these

claims. Dependent claims 18-22 have additional details concerning predefined query regions and/or moving objects that similarly are not present in Smartt.

The Rejections Based on Jagadish

The Examiner also alleges that Jagadish anticipates the present invention described by claims 17-20, 22, and 23, and, when modified by Smartt, renders obvious claim 21.

Again, Applicants respectfully disagree.

Jagadish discloses a method for decomposing a string in a database into overlapping "positional q-grams", sequences of predetermined length q, and containing information regarding the "position" of each q-gram within the string. An index is then formed of the tuples of the positional q-gram data.

Applicants again respectfully bring to the Examiner's attention that a "string" or "substring" in a database is likewise totally different from either a query region or moving objects, and Jagadish is not, therefore, even relevant to the claimed invention.

Therefore, claims 17-23 are clearly patentable over Jagadish.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-25, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

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